OROVILLE FACILITIES RELICENSING
(PROJECT NO. 2100)

SP-T2 Progress Summary

SP-T2. Project Effects on Special Status Species

REVIEW DRAFT

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SP-T2 Progress Summary

SP-T2. Project Effects on Special Status Species
July 2002

INTRODUCTION

This progress summary identifies the results, to date, of study and coordination efforts related to Study Plan T2 (Project Effects on Special Status Species). Specifically covered are the preliminary results related to

- Tasks 1 (bank swallow)
- Task 3 (peregrine falcon)
- Task 4 (Swainson's hawk)
- Task 5 (western yellow-billed cuckoo)
- Task 6 (valley elderberry longhorn beetle)
- Task 7 (California red-legged frog)
- Task 8 (giant garter snake)
- Task 9 (bald eagle)
- Task 11 (State and Federal Species of Concern)
- Task 12 (vernal pool invertebrates)

Task 2 (greater sandhill crane) study efforts have not been initiated as the survey window is in early fall. Task 10 (Federal Land Management Sensitive Species) data collection efforts will be initiated in the fall and winter 2002 following completion of all vegetative and habitat mapping efforts, per stakeholder guidance.

Species listed under the State or Federal Endangered Species Acts require special consideration related to project planning. The presence of State or Federally listed species can strongly influence project operations, maintenance activities, data collection, land use, and future development. For these reasons, early reporting of preliminary study results related to Study Plan T2 is required for relicensing coordination and planning.

All results presented in this progress summary are preliminary and primarily based on data collection efforts that occurred between February 2002 and July 2002. Many of the species currently under study are highly mobile, so annual changes in the locations of some special status species will occur over time.

Public release of specific location information related to species protected under the State and federal Endangered Species Acts can result in increased risk to the species (disturbance, harassment, shooting, and illegal collection). For this

reason, location information is treated in a general rather than a specific manner in this summary.

SUMMARY

Task 1 Bank Swallow Habitat and Population Surveys

The State of California listed the bank swallow as a threatened species during March 1989. This species is not federally listed.

Bank swallows historically bred in suitable habitat throughout lowland California (Grinnell and Miller 1944). The bank swallow's range in California has decreased significantly with only four known populations south of San Francisco Bay and about 70 percent of the statewide population currently occur along the Sacramento and Feather rivers (California Department of Fish and Game 1992).

Bank swallows occur in riverine habitat and require a sandy or silty vertical bluff or riverbank for nesting (Zeiner et al. 1990). Floods or very high flows are required to create and maintain the eroded banks favored by this migratory, colonial species. The principal threat to bank swallows are bank protection projects (Remsen 1978). Over 133 miles of rip-rap bank protection have been installed along the Sacramento River since 1960 (Jones and Stokes Associates 1987).

Task Status

A boat based survey of the Feather River between Oroville Dam and Verona was completed during June 2002. All active and inactive colonies were mapped and the total number of burrows in each colony was tabulated. Survey results were presented to the Department of Fish and Game (DFG) for preliminary review and comment upon survey completion. Other spot locations of potential habitat were also evaluated on Lake Oroville and within the Oroville Wildlife Area (away from the Feather River channel). All colony locations detected were mapped using GPS technology. Only burrows at least 6 inches in depth with dark entrances as viewed from distances of 10 to 30 yards were included in the census.

Preliminary results indicate that eight active bank swallow colonies are present on the Feather River between Oroville Dam and Verona totaling 2,274 burrows. An additional six inactive colonies were also identified within the same survey area totaling 813 burrows. None of the potential habitat identified on Lake Oroville or within the Oroville Wildlife Area was occupied during the 2002 breeding season.

Inactive colony size ranged from 43 to 375 burrows. Active colony size ranged from 34 burrows to 925 burrows. An occupancy rate of 47 percent was applied to the number of burrows in active colonies yielding an adult population estimate

of 1,056 pairs. Five colonies were identified between the project boundary and Marysville with an estimated population of 890 pairs. An additional three colonies were present between Marysville and Verona with an estimated adult population of 166 pairs. No estimate of productivity was included as part of this study. Comparison with historic nest survey information indicate that the 2002 bank swallow nesting population on the Feather River is substantially lower than those collected in 1987 which identified seven colonies ranging in size from 140 to 2,000 burrows (Humphrey and Garrison 1987). During the 1988 survey, 18 colonies containing a total of 6,592 burrows were recorded (Laymon et al 1988, Garrison 1988). The 1987 and 1988 DFG surveys are the most recent previous complete surveys of the entire Feather River.

Task 3 Peregrine Falcon Habitat and Population Surveys

The American peregrine falcon was federally listed as an endangered species in 1970 and subsequently listed as endangered by the State of California. The U.S. Fish and Wildlife Service (USFWS) recently delisted peregrine falcons but they remain State listed. The breeding population of peregrine falcons in California has increased from two known active nest locations in 1970 to over 120 nesting pairs in 1999.

Within California this uncommon breeding resident is found from the southern coast range north to the Oregon border and throughout the Cascade and Sierra Nevada mountain ranges (Zeiner et al. 1990b). Peregrine falcons nest on a variety of substrates throughout their range including river cut banks, hollows in large old trees, old raptor nests, bridges, skyscrapers, and cliffs. However, cliffs or cliff-like structures are the most common nest sites. Suitable cliffs are generally extremely high, frequently overlook water, and permit an expansive view of the surrounding countryside (Hickey 1942). In California, wintering peregrine falcons typically remain in the vicinity of their breeding territory (Jurek 1989).

Task Status

Pre-survey planning included a GIS analysis, which identified the locations of all, slopes over 65 percent. All mapped areas of steep slopes within the project boundary and within one mile of the project boundary were examined during the 2002 nesting season. One exception was potential cliff locations on the upper arm of the Middle Fork Feather River where site access was severely restricted due to low water levels. Peregrine falcons are also known to utilize cliff-like human structures for nesting. Selected human structures were also surveyed during the breeding season to determine occupancy. All potential nest sites were inspected at a minimum of once a month throughout the breeding season (February through July). Most potential habitat was surveyed more frequently.

Nest locations where adult peregrines were present during the nesting season were considered active. Nest locations where incubation behavior was observed were considered occupied (whether or not any young were produced).

Several historically active peregrine falcon nest territories are present in Butte County. Three active peregrine nest locations were identified within the study area during the 2002 breeding season. Two of these locations had been used historically. An additional new or previously unknown nest territory was identified during the course of the survey. Two nest territories were occupied and fledged a minimum of three young. The newly documented nest territory was the only territory where incubation behavior was not observed. This production of 1.0 young per active nest and 1.5 young per occupied nest compare favorably with statewide production data collected between 1975 and 1988 which averaged 0.83 young per active nest and 1.04 young per occupied nest (Jurek 1989). However, the federal Pacific Coast Recovery Plan goal of 1.5 young per pair was not met. (U.S. Fish and Wildlife Service 1982).

Forage locations were identified by following adult falcons. Virtually all foraging locations identified during the 2002 breeding season were within 0.6 miles of the nest location. No attempt was made to identify prey species. However, peregrine falcons are known to prey on at least 80 avian species in Northern California (Monk and Harlow 1983).

Nest survey results and potential management options related to nesting peregrine falcons were informally discussed with representatives of both the DFG and USFWS. Primary management concerns included site confidentiality, site security, and the potential impacts of maintenance activities. These issues as well as any other management concerns will be addressed in the Oroville Relicensing Wildlife Management Plan.

Task 4 Swainson's Hawk Habitat and Population Surveys

The Swainson's hawk was listed as a threatened species by the State in 1983. This species is not federally listed. By 1993, it was estimated that this migratory species had experienced a 91 percent population decline in California (Bloom 1980). The Statewide population was estimated at 375 pairs in 1980.

Swainson's hawks were historically found throughout most of lowland California (Grinnell and Miller 1944). Current distribution is limited to northeast California (primarily Modoc, Siskiyou and Lassen counties) and the Central Valley. This species decline is believed to be related to agricultural and urban land conversions (Estep 1989).

Swainson's hawks use a variety of agricultural crops for foraging including alfalfa, fallow fields, beet, tomato, irrigated pasture, rice (non-flooded), and cereal grains.

Task Status
All potential nest trees within or adjacent to cropland or annual grassland habitats within or adjacent to the study area were examined prior to the emergence of

spring foliage. All large stick nests were mapped and subject to examination during the breeding season (March through July). Swainson's hawk surveys also included identification and following of foraging adults in an effort to locate nest locations. All areas surveyed and all potentially suitable nesting habitat were downstream from Oroville Dam. Swainson's hawk nest surveys were not conducted on the Feather River downstream of the project area. However, locations of foraging Swainson's hawks were recorded during the course of Feather River bank swallow surveys.

No historic nesting within or adjacent to the study area had been previously documented. A nesting pair of Swainson's hawks was discovered during the course of the survey. This pair is nesting in a thin strip of mature riparian habitat within the Oroville Wildlife Area and foraging extensively within an adjacent one-year old walnut orchard. This nest produced two young during the current breeding season. No other sightings of adult Swainson's hawks were made in any other location within the study area.

DFG regulatory staff and management staff of the Oroville Wildlife Area were notified of this new or previously unknown nest location. DFG is currently evaluating threats to this nest territory and considering management opportunities.

Task 5 Western Yellow-billed Cuckoo Habitat and Population Surveys

The western yellow-billed cuckoo was listed as a State threatened species in 1971. This species status was reclassified to endangered in 1987.

Historic records indicate that this species was widespread and locally common in California. Today its distribution is limited to several small isolated areas of the State. The two largest remaining populations in the State are near the Colorado and Sacramento rivers. The 1977 statewide population was estimated at between 122 and 163 pairs (Gaines and Laymon 1984). A subsequent statewide survey in 1988 estimated that only 31 to 33 pairs remained (Laymon and Halterman 1988). Loss of riparian habitat accounts for most of the population decline (Laymon 1980).

Suitable cuckoo nesting habitat is described as deciduous riparian thickets or forests with dense low understory near slow moving waterways (Ziener et al 1990a). These thickets or woodlands are generally at least 25 acres in size and 300 feet in width.

Potential cuckoo habitat within the study area and adjacent lands is restricted to riparian habitat within the Oroville Wildlife Area. Very few blocks of suitable habitat (dense low understory) greater than 25 acres and 300 feet in width occur within this area. Most of the areas within the Oroville Wildlife Area dominated by riparian vegetation are historic dredger tailings. Dense low understory occurs in

small blocks where the topography is such that willows and other riparian shrubs can root to groundwater.

Task Status
Surveys for nesting cuckoos were conducted using pre-recorded cuckoo calls. All survey work was conducted during June and July 2002. A portable tape player was used to broadcast cuckoo calls. In between calls the tape was stopped to listen for response calls and to observe adjacent vegetation for cuckoos. Several call/listen cycles were repeated at a 100 yard calling distance within each block of potentially suitable nesting habitat. Minimum habitat block surveyed was 10 acres.

No western yellow-billed cuckoos were detected during the 2002 breeding season.

Task 6 Valley Elderberry Longhorn Beetle Habitat and Population Surveys

The valley elderberry longhorn beetle was listed as a federal threatened species during August 1980. The known distribution of this species has greatly increased through additional survey efforts since the time of its initial listing. The USFWS now identifies the species range as throughout the Central Valley and up to 3,000 feet in elevation on the eastern edge of the valley and to the Coast Range watershed divide along the western side of the valley (U.S. Fish and Wildlife Service 1984).

The beetle is primarily restricted to riparian habitat and adjacent uplands. The valley elderberry longhorn beetle is dependent upon its host plant the elderberry (Sambucus sp.) throughout its life cycle. The valley elderberry longhorn beetle spends most of its two-year life cycle boring within the stem in a larval stage. The beetles emerge from the stem March through June as adults to lay eggs, completing the life cycle (Barr 1991).

Elderberry bushes containing valley elderberry longhorn beetle emergence holes have historically been identified at several locations within the study area. Elderberry bushes are one of the most common shrub species within the portion of the Oroville Wildlife Area bordering the Feather River.

Task Status
Elderberry bushes are currently being mapped and surveyed per USFWS protocol within 100 feet of all project features within the project area including roads and trails. This survey effort is ongoing and is being conducted in conjunction with survey efforts related to Study Plan T1 Effects of Project Features and Operations on Wildlife and Wildlife Habitat and T9 Recreation and Wildlife. Survey staff is currently collecting elderberry density data within the portion of the Oroville Wildlife Area bordering the Feather River. In this area, the study plan calls for development of a sub-sampling protocol. Preliminary

elderberry density/distribution information is required to develop a statistically valid sub-sampling strategy.

Elderberry bushes can be identified and surveyed to protocol year-round. The majority of the elderberry survey will occur during the off-season for most field studies (September through January).

Task 7 Red-Legged Frog Habitat and Population Surveys

The California red-legged frog was listed as a federal threatened species during June 1996. This species is considered a species of special concern by the State. The California red-legged frog has been extirpated from approximately 70 percent of its former range with only two known populations remaining east of the coast range.

The California red-legged frog can occur from sea level up to approximately 5,000 feet elevation with most known populations below 3,500 feet. This species uses a variety of aquatic habitats for reproduction including streams, deep pools, backwaters, ponds, marshes, sag ponds, dune ponds, and lagoons (U.S. Fish and Wildlife Service 2000). Breeding adults are generally associated with deep (greater than two feet) slow moving water bordered by dense low riparian or emergent vegetation (U.S. Fish and Wildlife Service 2000). Upland areas near breeding locations can also be used extensively during the summer (U.S. Fish and Wildlife Service 2000). Several reasons for the population decline have been identified including habitat loss (alteration, degradation, and fragmentation), urbanization, agricultural practices, water management activities, mining, livestock practices, recreational impacts, timber harvest practices, exploitation (as food), disease, introduced species (e.g., bullfrog, mosquitofish, largemouth bass), drought and contaminants (U.S. Fish and Wildlife Service 2000).

California red-legged frogs are not currently known to exist within the project boundary. However, the largest remaining population within the Sierra Nevada mountain range is within one mile of the project boundary in the North Fork Feather River drainage.

The red-legged frog survey protocol recommends three steps; 1) identification of area of potential project effects, 2) habitat suitability surveys within areas of potential project effects, and 3) population surveys in areas of suitable habitat and potential project effects.

Task Status

Preliminary assessment of areas of potential project effects was completed during July 2002. Habitat suitability surveys will be initiated during August and completed by December 2002. These habitat evaluations require the results of the habitat/vegetative community mapping currently underway. Population surveys will be initiated during May 2003 per USFWS protocol.

Task 8 Giant Garter Snake Habitat Survey

The giant garter snake was listed as a threatened species under the federal Endangered Species Act during October 1993. It has also been listed as threatened under the California Endangered Species Act since 1971.

The giant garter snake is endemic to the wetlands of the Central Valley of California. Historic range is believed to include valley floor wetlands from the vicinity of Butte County south to near Bakersfield. Historically, giant garter snakes were found in natural wetlands associated with flood basins.

Thirteen sub-populations of giant garter snake have been identified. Population information is generally lacking. The northern extent of the current range of this species is described as Sacramento and Contra Costa counties (Fox 1951), to near Gridley (Hansen and Brode 1980), to the vicinity of Chico (Rossman and Stewart 1987). In addition to natural wetlands, giant garter snakes are now found in agricultural wetlands (rice), managed wetlands (duck clubs and State and federal refuges) agricultural drains, ponds, and other artificial waterways.

The Giant Garter Snake Recovery Plan (Miller and Hornaday, 1999) describes the essential habitat components for this aquatic reptile as (1) adequate water during the snakes active season (early spring through mid-fall) to support dense populations of prey; (2) presence of emergent herbaceous cover (cattails and tules) for escape cover and foraging habitat; (3) grassy upland habitat adjacent to waterways for basking; and (4) higher elevation upland habitat for flood flow refuge. This species is absent from larger rivers, riparian woodlands, and wetlands with sand, rock, or gravel substrates (Miller and Hornaday 1999).

Giant garter snakes have not been identified within the project boundary. However, this species has been reported in the Cherokee Canal near Richvale (approximately 2 miles west of the Thermalito Afterbay). Rice fields and associated irrigation/drainage canals are present along the western project boundary along State Highway 99. Potentially suitable habitat is present within the study area.

<u>Task Status</u>
Protocol level giant garter snake population surveys are not currently planned. Rather, habitat suitability studies will identify areas of potential project effects and suitable giant garter snake habitat. Within these areas, potential project related impacts will be identified and management opportunities developed to minimize any potential impacts.

Preliminary assessment of areas of potential project effects was completed during July 2002. Habitat suitability surveys will be initiated during August and completed by December 2002. These habitat evaluations require the results of the habitat/vegetative community mapping currently underway.

Task 9 Bald Eagle Habitat and Population Surveys

The USFWS listed the Southern bald eagle as an endangered species in March 1967. After a federal status review they were down-listed to threatened in 1995. They are currently proposed for federal delisting (U.S. Fish and Wildlife Service 1999). This species is currently State listed as endangered.

Bald eagles historically nested throughout California near seacoasts, major rivers, and lakes. Over 160 pairs currently nest in California (up from 28 pair in 1978) while hundreds of additional bald eagles migrate into California during the winter.

Nesting habitat is described as old-growth trees and snags in remote mixed stands near water (Zeiner et al. 1990a). In a 1979 survey of 95 bald eagle nest sites in northern California, 87 percent were in dominant or co-dominant ponderosa pine or sugar pine (Lehman 1979). Associated stands were generally open (less than 40 percent canopy cover), and within one mile of a water body. Approximately 1/3 of the nest sites were within 0.1 miles of a water body and 85 percent of the nests had an unobstructed view of the water body. Seventy percent of the nests were associated with reservoirs.

At least five bald eagle nest territories have been historically documented within the project vicinity. Plumas National Forest, California Department of Parks and Recreation, and Pacific Gas and Electric Company manage the lands occupied by these territories and monitor nest occupancy and success.

Task Status

2002 breeding seasons surveys were conducted on Lake Oroville, Diversion pool, Thermalito Forebay, Thermalito Afterbay, and along the Feather River within the study area. Surveys were primarily boat based, but both foot and trucks transport were employed in some areas. Surveys involved inspection of potentially suitable nest trees for nests, observation and mapping of areas where adult eagles were present, and following adult eagles to locate nest and determine foraging areas. Repeated visits to areas of regular bald eagle activity occurred whether or not a nest had been identified. All active nest territories were visited at least once per month.

Three bald eagle nest territories were active (adult bald eagles present during the breeding season) during the 2002 breeding season. All three active nest territories were on Lake Oroville. No adult bald eagles were detected in other surveyed areas within the area of potential project effects. Two historic territories

were abandoned. All three of the active nest territories had a pair of adult bald eagles present on the nest tree during February. Only one territory was occupied (adult bald eagles present with incubation behavior observed) and produced two fledglings. No incubation behavior was detected at the other two active territories. However, adult bald eagles continued to be observed sporadically within the vicinity of these territories throughout the breeding season. All of the 2002 fledgling production occurred at a new or previously unknown nest territory.

The 2002 bald eagle production was 0.66 fledglings per active nest and 2.0 per occupied nest. This level of production is less than recovery plan goals identified for active nests in the Pacific Recovery Plan (U.S. Fish and Wildlife Service 1986). Between 1990 and 1997, only three fledglings were documented from nest territories within the study area (Jurek 1997). However, during this period neither searches for new territories or monitoring of production from known territories occurred on a consistent basis.

Several bald eagle nest territories have become established along the Sacramento River below Lake Shasta in the last decade. No nests are known from the Feather River below Lake Oroville. Bank swallow survey crews evaluated potential bald eagle nesting habitat downstream of the study area during the course of the bank swallow population surveys. No large stick nests of adult bald eagles were observed during the course of these surveys.

Bald eagles can be intolerant of human activity during the breeding season. However, tolerance to human activity varies from pair to pair. Human activity can result in nest abandonment and subsequent loss of production (Detrich 1980, Bogener 1980, Lehman 1983). In some cases breeding bald eagles have relocated their nest in response to human activity (Thelander 1973). For these reasons human activity (including Oroville Relicensing recreation and cultural resources survey efforts) were restricted in the vicinity of all active nest territories during the 2002 breeding season.

The identification of a new bald eagle territory on Lake Oroville this breeding season required a prompt evaluation of potential impacts for State and federal Endangered Species Act compliance. Both USFWS and DFG were notified concerning the location of the new or previously unknown nest territory. The Department of Water Resources (DWR) and Department of Parks and Recreation (DPR) jointly evaluated potential impacts to the nest territory. To avoid potential impacts a primary zone was delineated wherein human activity was restricted during the breeding season. The size and shape of the primary zone was based on observed eagle use, nest location, screening vegetation, and physical topography. Further protection was provided through a shoreline recreation closure, relocation of recreation facilities, and avoidance of new recreational development. USFWS and DFG staffs were consulted during the development of protective measures. Further, USFWS staff visited all active nest territories to evaluate the adequacy of previously developed territory

management plans. Their recommendations will be incorporated into both new and existing territory management plans.

Task 11 State and Federal Species of Concern

Study Plan T2 Task 11 directs that location information be recorded related to all observations of State and federal species of concern (including U.S. Forest Service and Bureau of Land Management sensitive species). During the course of other Oroville Relicensing surveys, all observations of State and federal Species of Concern were mapped. These surveys include areas within, adjacent, and downstream from the project area. Additional information including number of individuals, age, activity, features, and date were recorded in the field and transferred to a GIS database at the end of each field day.

Task Status

Between February 21 and July 31, 2002, 165 location records for State or Federal Species of Concern were added to the GIS database. These records include 588 individuals of 19 species. Species occurrence in order of decreasing abundance are

- American white pelican
- double-crested cormorant
- osprey
- white-faced ibis
- northern harrier
- black tern
- golden eagle
- Cooper's hawk
- loggerhead shrike
- black-shouldered kite
- American bittern
- California gull
- prairie falcon
- yellow-breasted chat
- sharp-shinned hawk
- common loon
- ringtail
- lark sparrow
- black-crowned night heron

Several additional species have been added to the list of State or federal Species of Concern since study plan development. Location information for these newly added species will be added to the GIS database as they occur during the course of future relicensing studies.

Task 12 Vernal Pool Invertebrate Habitat Assessment

The study area is known to be within the range of three federally listed eubranchiopod species, the vernal pool fairy shrimp *Branchinecta lynchi* (Threatened), the Conservancy shrimp *Branchinecta conservatio* (Endangered), and the vernal pool tadpole shrimp *Lepidurus packardi* (Endangered).

DWR performed this assessment to identify the potential impacts to the habitat for listed and unlisted vernal pool crustaceans. The intent of this assessment is not to perform protocol-level surveys for listed species of vernal pool crustaceans (as per U. S. Fish and Wildlife 1996 "Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a) (1) (A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods.") throughout the relicensing study area. Rather, any issues related to the presence or absence of any listed species of vernal pool crustaceans would be dealt with on an individual project-level basis.

The tadpole shrimp *Lepidurus packardi* is federally listed as an endangered species. This tadpole shrimp species is found in vernal pools throughout the Sacramento Valley, and is reported to occur in Butte County (Christopher Rogers, pers. comm.). Typically *Lepidurus packardi* is green in color, but may be mottled with brown in highly turbid water. *Lepidurus packardi* is omnivorous and generally forages on the bottoms of pools in dense vegetation. Tadpole shrimp tend to be slow growing and are usually collected after the vernal pool has been ponded for 30 days.

The Conservancy shrimp *Branchinecta conservatio* is federally listed as an endangered species. This species is reported from large (> 1.2 acres) and deep (> 6 inches) turbid alkaline pools. This species of fairy shrimp has an extremely disjunct distribution; *Branchinecta conservatio* is known from Tehama and Butte counties, in the northern part of the Sacramento Valley, Solano County at the Jepson Prairie, Merced County, in the San Joaquin Valley near Haystack Mountain, and an isolated occurrence from northeastern Ventura County (Eriksen and Belk 1999).

The vernal pool fairy shrimp *Branchinecta lynchi* is federally listed as a threatened species. This shrimp species is found in vernal pools throughout the Central Valley and western Riverside County in California, and near Medford, Oregon (Eriksen and Belk 1999). This fairy shrimp species occurs in neutral to slightly alkaline vernal pools throughout the California Central Valley, and in rock outcrop pools along the Interior Coast Ranges, south of the Sacramento River Delta.

Typical habitat for fairy shrimp and tadpole shrimp in California include vernal pools, ponded areas within vernal swales, rock outcrop ephemeral pools, playas, alkali flats, and salt lakes (Eng et al. 1990). Pool volume is important in determining potential shrimp habitat because deeper pools with a large surface area can more easily maintain their dissolved oxygen levels. Similarly, deep pools will pond long enough to allow the shrimp to complete their life cycle.

Task Status

The initial phase of the assessment of the vernal pools included checking for known occurrences of listed eubranchiopods within or adjacent to the project area. The USFWS Endangered Species Office and other professionals were contacted for possible past surveys within or near the study area. The DFG California Natural Diversity Database (2000) was checked for reported occurrences.

The USFWS National Wetland Inventory was checked for recorded wetlands within the study area. Since aerial photographs were not yet available at the time, the survey consisted of walking in a 10-meter grid pattern through most areas. Some of the vernal pools (75%) were initially mapped in the summer and fall of 2001. In spring of 2002, the previously mapped pools were checked and verified. Those that did not have evidence of vernal pool vegetation or prolonged pooling were dropped from consideration. The remaining 25% of pools were found during this survey.

Each pool was located with the GPS and mapped in ArcView GIS. Outlines of pools were digitized on rectified aerial photographs in ArcView for acreage amounts. Only areas within the project boundary or immediately adjacent areas where project effects to individual pools are possible were considered in this assessment.

Within the project boundary, there are 215 vernal pools totaling 13.9 acres, ranging from 0.002 to 3.9 acres in size. One-hundred and sixty-seven (167) of these pools are around the Thermalito Afterbay, with the remaining forty-six (48) pools around the Forebay. One-hundred and seventy-two pools (80%) of the pools within the study area are formed by the interruption of natural runoff flow patterns by some artificial structure, such as a road, berm, weir, or levee. Approximately 60% of the pools occur in two clusters, the south end of Wilbur Road (with 83 pools) and the South Forebay boat ramp area (with 47 pools).

Vernal pool specialists are currently evaluating each vernal pool to identify potential project related impacts. Per the Study Plan, DWR will develop a management plan for areas containing vernal pools. Development of this plan will be coordinated with other agencies including State Parks, Department of Fish and Game-Oroville Wildlife Area staff, Butte County mosquito abatement, and CALTRANS. The goal of this plan is to insure that areas containing vernal pools

are managed in a coordinated fashion to protect, maintain, or enhance vernal pool habitats. USF&WS will be informally consulted during the development of this plan.

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